



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/050,359	03/31/1998	DANA M. FOWLKES	FOWLKES-4B	6741
1444	7590	06/15/2004	EXAMINER	
BROWDY AND NEIMARK, P.L.L.C. 624 NINTH STREET, NW SUITE 300 WASHINGTON, DC 20001-5303			WESSENDORF, TERESA D	
			ART UNIT	PAPER NUMBER
			1639	39
DATE MAILED: 06/15/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/050,359

Applicant(s)

FOWLKES ET AL.

Examiner

T. D. Wessendorf

Art Unit

1639

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 22,25-30 and 32-46 is/are pending in the application.
- 4a) Of the above claim(s) 40-42 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 22,25-30 and 32-46 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 1639

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/14/02 has been entered.

Election/Restrictions

Applicant's election with traverse of Group I, claims 22, 25-30 and 38 in the reply filed on 12/24/02 are acknowledged. The traversal has been on several grounds, particularly that the inventions of I and II together have been examined. It is however, noteworthy that due to the numerous amendments to the claims, it appears that departure from the original claims have been extensive. However, since both of these inventions have previously been examined, hence, the restriction between the groups I and II, have been reconsidered and withdrawn. However, the restriction with respect to the species is maintained. Applicants' election of the 11-mer MDM2-binding peptide, (Seq.

Art Unit: 1639

ID. No. 43); m and n are each 5 is noted. Applicants' arguments with respect to the peptides in the library having SR and SS linkers are confusing. Applicants allude to an accompanying amendment. But the amendment, at least claim 27, does not recite for said linkers. Accordingly, applicants' arguments with respect to the species election with linkers have not been considered.

The requirement is still deemed proper and is therefore made FINAL.

Status of Claims

Claims 22, 25-30 and 32-46 are pending in the application.

Claims 1-21 and 31 have been cancelled.

Claims 40 and 42 (in part) and 41 are withdrawn from consideration as being drawn to non-elected invention with respect to claims with linkers. These claims will be examined to the extent that L1 and L2 are nothing, which is the originally claimed and examined e.g., claim 30.

Claims 22, 25-30 and 32-46 are under examination.

Art Unit: 1639

Specification

The disclosure is objected to because the amendment on 3/14/02, which requested amending page 10, line 1 from "structural" to -structured-- is confusing. The definition in the as-filed specification appears to be more apt for the original "structural" rather than the requested "structured" term. The definition recites "some structural relationship between the member libraries". Webster's dictionary defines structured as ---highly organized---.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 22, 25-30 and 32-46 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific or substantial asserted utility or a well established utility for reasons set forth in the last Office action.

Art Unit: 1639

Response to Arguments

Applicants argue that they are claiming a structured panel of peptides that has been carefully designed so as to facilitate the identification of target-binding peptides and other target-binding molecules. The structured panel of libraries, as argued, is a research tool.

In response, there is nothing in the specification that shows that the carefully designed structured panel of peptides indeed facilitated identification of either a target-binding peptides or any kind of target binding molecules. If the used of said panel is simply to serve as a research tool to identify compounds, then the specification must at least demonstrate such utility. However, the specification does not describe a single peptide-binding target obtained from said structured panel to support applicants' arguments.

It is argued that the specification plainly discloses that the panels of peptides may be used to identify non-peptide compounds which bind a target. Reliance is made on page 17, line 22 to page 18, line 11 of the instant disclosure. It is further argue that the ultimate useful compound is the one from the complementary library not the original library. Thus, one could screen a peptide library to find peptides that bind the target,

Art Unit: 1639

and then screen a benzodiapene library for benzodiapenes that inhibit the binding of the peptide to the target.

In reply, a review of the relevant sections reveals not a panel but only a combinatorial library. A panel of library is not a library but a composite of a library. The reaction in a panel library is perhaps more complex and unpredictable relative to a single combinatorial library. This is especially so since as the specification defines a panel as a collection of different and separately composite combinatorial library related in *some structural relationship* between member libraries.

Applicants' further argument especially with respect to the complementary library is confusing, the relevancy to the instant utility is beside the point. Applicants' reliance in showing the utility of the library is not commensurate in scope with the claim that recites a panel. There is nothing in the specification that describes that a single library effect is the same for a panel comprising a composite of different combinatorial library (not just a library). Applicants throughout their arguments refer to peptide libraries not to a panel as claimed.

Applicants again reiterate the commercial availability of peptides by presenting the peptide libraries from New England Biolabs.

Art Unit: 1639

In response, as stated above, applicants are not claiming a library but a panel of library. Applicants are not claiming the New England library. Rather, purportedly a newly discovered and novel panel. How can said alleged newly discovered panel have the same utility as a known library (not even a panel)?

Applicants urge rephrasing the "panel" claims to a "kit" claim to comport with the kit library commercially made by New England Biolabs. Applicants state that a "kit" is a plurality of components sold together which are intended to be used cooperatively. In the instant panel each library is a component of a kit. The screening of the libraries provides information as to the peptide binding characteristics of a target substance, all must be screened for the sequence space to be fully explored.

In reply, the specification as filed does not recite that the panel is a kit i.e., no support in the specification for a kit. A kit as applicants state above is a plurality of distinct components. However, a panel is but a single component i.e., a library albeit each library varies from one another. Furthermore, a kit contains an instruction as to how to mix or use the different components therein. The instant panel does not contain even a single utility let, alone an instruction as to how to use it.

Art Unit: 1639

It is argued that if a "particular type" is meant that they were "purpose-built" then it is certainly not true.

In response, a "particular type" of library refers to a specific library structure. For example, the C-X7-C library as the New England and a control target specific for said library.

Applicants argue that the commercial success of he claimed invention may be applicable to the objective evidence of nonobviousness, rather than the showing of real world utility for the peptide libraries as claimed.

In reply, how can applicants compare the real world utility of the instant panel to a different but commercially successful library? A showing of a different class of library to an allegedly new and novel panel could not be predicated on a commercially available, known and useful product.

Applicants argue that the PTO has issued numerous patents to libraries per se.

In response, it is well settled that each case is treated on its own merits.

Applicants argue that they have successfully screened their peptide libraries and identified peptides, which bind several targets including those listed therein.

Art Unit: 1639

In reply, as stated above these are peptides and not panel of peptides. Furthermore, these peptides have definite structure such that binding occurs.

Applicants are surprised by the characterization of their libraries as unstructured. Applicants urge that claims 26 and 27 recited displaying their peptides on viruses. Some of their libraries are defined in the sense (which is the only sense in which the Ph.D-7 libraries are" defined").

In response, the instant panel (not library as Ph.D-7 or 12) contains any type, not only a single library variant, but also numerous variations of peptides in each library. This is made more complex since not a peptide structure of a single library is claimed. Even after finding a peptide structure, the middle portions of the peptide structure has to still be determined to fix said portion to ensure that binding occurs at this position, if indeed this is where binding occurs. On top of this a plurality of library has to be made into a highly organized panel such that its members in its library binds a target, (of also unknown constitution) and finally to display said panel in any kind of viruses. The guidance, direction and assurance in the specification for any kind of utility, absent any showing, for a single panel, appears nothing more than generalized statements, at most, speculative.

Art Unit: 1639

Applicants continuing arguments with respect to the libraries being sold commercially will only be feasible, if indeed the product has real world utility. Applicants have not shown that the instant panel has been commercially available to rely on its real world utility.

Applicants argue that the commercially available random peptide library MATCHMAKER is less defined than the instant panel.

In reply, MATCHMAKER clearly defines their library as a 16-residues encoded by synthetic, random oligos having an ORF for 16 amino acids followed by an in-frame stop coding. The oligos are flanked by BamHI and EcoRI recognition sites and are directionally cloned in pGADGH and a stop codon that ensures that only the first nucleotide sequences will be expressed as a Gal4AD/peptide fusion. A user manual is also enclosed as an aid. The claimed panel is inapposite to this clear defined library.

Much of applicants' arguments are merely repetitive. That is, the arguments with respect to the commercial availability of still other libraries, the numerous patents that have issued for libraries and etc. These arguments have all been addressed above.

It is noteworthy to address applicants' arguments that Brenner was one of the few cases to find a lack of 101 utility, but addressed the utility of a single compound, not of a library of thousands or millions of compounds.

Art Unit: 1639

In reply, if Brenner is drawn to a single compound that lacks utility, how much more for a zillion combinations of compounds, the utility of which has not been shown, except, to compare to the commercially available, yet of different compounds. To let applicants engross on yet undefined utility merely on basis of the issued patents or the commercial availability of the different compounds, would bar those who have actually discovered a real world utility for a panel of the type as claimed. Thus, the prophetic statements in the specification regarding the utility of the library not a panel of libraries, lacks the real world utility, as required by the statute.

Claims 22, 25-30 and 32-39 and 43-46 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a substantial or specific asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

Claim Rejections - 35 USC § 112, first paragraph

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise,

and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 22, 25-30 and 32-46 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention for reasons set forth in the last Office action.

Response to Arguments

A). Applicants admit that the phrase "middle 50%" does not appear elsewhere in the specification. Applicants argue that a preference for an "internal residue" appears at page 25, line 25, one for a constant "middle residues" is set forth at page 10, lines 4-5 and a constant "central residue " at page 28, lines 40-41 and so forth. The "middle 50%" just is a more quantitative form of the "more or less centrally located" statement. There is no reason set forth in the specification for limiting it to the peptides of just 5-41 amino acids defined by the formula.

In response, as applicants admit the as-filed specification does not recite for the claimed "50% middle". The term just appear in the claims to present in a more quantitative from the

Art Unit: 1639

statement "more or less centrally located" statement. Applicants might be their own lexicographer carries with it the notation that they will consistently used terms that are used in the as-filed specification. Applicants cannot just coin terms without support from the original disclosure. This is made more complex for an undefined peptide sequence.

B). The specification does not provide a written description for the claimed structured panel of library and a peptide wherein the constant residue is "***within*** the middle 50%" of the sequence. The disclosure does not describe how a structured panel can be made from a plurality of libraries, how the plurality of library form or structured into a panel or the minimum or maximum limit of the plurality contained in any one of the panel and a constant residue that is within 50% of the sequence. It is worthy to note, applicants' disclosure at e.g., page 28, lines 4-23. Also, applicants' REMARKS at page 6, which recite that, the panel of libraries has not been screened and may still be screened separately. Also, the disclosure does not describe that constitutes a subpanel of a panel or a panel with more than two biased residue positions where the amino acids allowed in each library at said biased positions being only a subset of the set of amino acids allowed at the remaining

Art Unit: 1639

positions of said library. The specification does not describe how a subpanel can be obtained from a panel of a peptide of undefined structure or a subset from a set. A "written description of an invention involving a chemical genus, like a description of a chemical species, requires a precise definition, such as by structure, formula [or] chemical name of the claimed subject matter sufficient to distinguish it from other materials". University of California v. Eli Lilly and Col, 43 USPQ 2d 1398, 1405 (1997), quoting Fiers V. Revel, 25 USPQ 2d 1601m 16106 (Fed. Cir. 1993). Also, see University of Rochester v. G.D. Searle & Co., 68 USPQ2d 1424 (DC WNY 2003).

C). The as-filed specification does not provide support for the claims as amended as follows:

1. Claim 27, for example, "a plurality of biased combinatorial linear peptide libraries". Cf. with the definition of "structured panel" at page 10, line 1 of the specification, as stated by applicants. The specification does not define a plurality or the maximum number encompassed by said plurality.

(a) **at least** five residues from both ends of the peptides or (b) **within** the middle 50% of the peptides" and "in which the peptides are displayed on viruses". Also, the claimed, "each library being a separate and physically distinct entity."

2. The entire claims 32-35, 39, and 43-46. For example, "plurality of residue positions other than "said first position

Art Unit: 1639

and the proviso "where if said libraries comprise more than two constant residue positions, the constant residue positions other than said first and second positions are constant for all peptides in said panel" 2. In claim 32, for example, "where said panel comprises a plurality of subpanel." In claim 33, for example, the claim to a "subset of a set", especially as applied in the context of the claimed structured panel.

MPEP 714.02 clearly states that applicants point out where in the disclosure support for the new limitations appear.

Claims 22, 25-30 and 32-46 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The specification does not teach how to make a structured panel. The specification provides an unclear definition for said structured panel. Not a single panel however has been made or exemplified. The specification is replete with general statements as to what constitutes a panel. It does not describe how the different libraries have been made to a structured panel, displayed on viruses. This is made more complex as the examples in the specification provides for nothing more than

Art Unit: 1639

prophetic statements for a library. There is no mention of a method of making and using a panel except for the prophetic statements made for the library.

Claim Rejections - 35 USC § 112, second paragraph

The following is a quotation of the second paragraph of 35

U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 22, 25-30 and 32-46, as amended, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention for reasons of record.

Response to Arguments

A). Applicants argue that claims 32 and 33 are not omnibus type claims as each points out what is included or excluded by the claim language. Applicants rely on the issued Holmes patent.

In response, as stated each application is treated on its own merits. The instant claim does not point out what is included or excluded by "a subset of the set of amino acids allowed at the remaining positions of said library" or a panel as a whole or "a panel comprising a plurality of subpanels, each comprising a plurality of libraries, and in each subpanel, the

Art Unit: 1639

location of the second position is constant". It does not define where one begins and one ends or the differentiating characteristic of a subpanel or a set or a subset or how is the plurality of libraries comprised in either a set, subset, subpanel and other non-differentiating elements of the claims. The Holmes reference does not contain these confusing elements.

B). Applicants do not understand why the term fixed on a claimed to a structured panel, without a structure can be considered indefinite. Yet, applicants explain their position with a structure as shown in the libraries of (1)-(3) to satisfy the criterion of claim 27.

In reply, applicants' illustration with the accompanying libraries formulae is not controverted. However, applicants' arguments are not commensurate in scope with claim 27, at least, which does not recite a formula. It is suggested that applicants recite a formula in claim 27 to obviate the rejection. The rejections under paragraphs C-F no longer applies in part in view of applicants' arguments and amendments to the claims.

Claim 25, 30, 32, 33 and 35, as amended, are rejected under 35 USC 112, second paragraph as follows:

1. Claim 25 is inconsistent or at odds with claim 30. Claim 30 recites display on viruses.

2. Claim 30 definition of R "is the amino acid at said first fixed position" provides for confusion and ambiguity. The claim already defines R as Trp, Pro or Tyr. It is suggested that

Art Unit: 1639

the claimed language be deleted. The definition of m and n do not differ by two is contradictory to the preceding statement of either (a) or (b). For example, if $m=0$, then n is 2, R which is the fixed residue is not the middle residue. It is suggested that the variables m and n be defined as in the specification. Also, that the claimed be amended to recite the formula since the panel (composition) is usually described in terms of its structure or formula. This rejection has similar import to dependent claims 22, which depends on claim 27.

3. Claim 32 is confusing as to the "plurality of subpanels", especially in the absence of positive support in the specification. It is unclear as to the plurality of libraries contained in a plurality of subpanels contained in a panel. Is the subpanel separate and different from the plurality of libraries having the first fixed position? What would be considered as the basis or standard by which a plurality of subpanels in panel is determined? Applicants' multiplication of claims goes beyond the original disclosure. Claim 32 is inconsistent with the definition of the structured panel at page 10, line 1, quoted by applicants. That is, a simple variation of a constant residue in a library that forms a panel. The rejection has similar import to claim 33 as to a "subset of a set" instead of the subpanel of claim 32.

4. Claim 35 is indefinite as to the characterization of the compound by the method by which the library is made, especially

Art Unit: 1639

since the compound is capable of being defined in a structural sense.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 32-38 are rejected under 35 U.S.C. 102(a) as being anticipated by Pinilla et al (USP 55,556,762).

Applicants state at page 21 of the instant REMARKS that the examiner cites a Pinilla article, there is also a Pinilla patent on scanning libraries. [Contrary to applicants' statement the Pinilla patent was used in the previous Office actions].

Applicants admit that the "Pinilla patent relates to a scanning library,.....Pinilla set forth the concept or a panel of libraries which differ as a result of the "scanning" (shifting) of the position of a constant residue from library to library.

Pinilla's scanning position is equivalent to our 'second positions' (claim 32)." Applicants then refer to claim 13 of

Art Unit: 1639

the Pinilla patent. Applicants continue "....what he [Pinilla] calls a 'set", we call "subpanels". What he calls a "predetermined position", we call our "second position", although his claim literally allows this to be a variable AA even within one set....." Accordingly, the array of Pinilla is the same array as the instant claimed panel. Applicants are further referred to the rejection of the previous Office action, specifically 11/29/99.

Response to Arguments

Applicant's response reciting the different amendments to the claims is incomplete and does not address the rejection over this reference.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

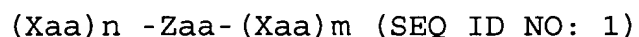
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 22, 25-30, 38-40 and 42 are rejected under 35 under 35 U.S.C. 103(a) as being obvious Cantley et al (USP 5,532,167) in view of Pinilla.

Cantley discloses at col. 3, line 1 up to col. 12, line 1 a degenerate peptide library which is a population of peptides in which different amino acid residues are present at the same position in different peptides within the library. For example, a population of peptides of 10 amino acids in length in which the amino acid residue at position 5 of the peptides can be any one of the twenty amino acids would be a degenerate peptide library. A position within the peptides which is occupied by different amino acids in different peptides is referred to herein as a "degenerate position"; a position within the peptides which is occupied by the same amino acid in different peptides is referred to herein as a "non-degenerate position". The "oriented degenerate peptide library" used in the method of the invention is composed of non-phosphorylated peptides which have a phosphorylatable amino acid residue at a fixed, non-degenerate position. This means that the peptides contained within the library all have the same phosphorylatable amino acid residue at the same position within the peptides. Phosphorylatable amino acid residues include inter alia,

Art Unit: 1639

tyrosine. This type of oriented degenerate peptide library is a phage expression library (displayed on viruses as claimed). The term "phage expression library" is intended to mean a population of filamentous bacteriophage particles which express a library of peptides on their surface wherein each phage particle expresses a different peptide. A phage expression library is based upon the expression by the phage of peptides encoded by nucleic acid introduced into the phage. Degenerate positions in the peptides are created by inserting degenerate nucleic acid sequences, i.e., nucleic acids which have different nucleotides at the same position in different nucleic acid molecules. Degenerate nucleic acid sequences can be made by standard techniques known in the art. The oriented degenerate peptide library is composed of peptides having a formula:



wherein Zaa is a non-degenerate phosphorylatable amino acid selected from Ser, Thr and Tyr, Xaa is any amino acid and n and m are integers from 1-10 inclusive. Thus, (Xaa)_n and (Xaa)_m can be degenerate residues and there are between 1 and 10 residues (not all of which are required to be degenerate) on either side of the non-degenerate phosphorylatable residue. A peptide library comprising peptides comprising the formula (Xaa)_n - Zaa - (Xaa)_m, (wherein Zaa is a non-degenerate phosphorylatable amino

Art Unit: 1639

acid, Xaa is any amino acid and n and m are integers from 1-10 inclusive), can be contained within a larger peptide or within a protein. For example, when a phage expression library is used, the peptide encompassing the phosphorylatable amino acid residue and the surrounding degenerate amino acid residues is contained within a phage protein expressed on the surface of the phage (i.e., the degenerate peptides are part of a fusion protein comprising the phage particle protein and the peptide inserts of the library). Cantley does not disclose that the different libraries are collectively a panel. Pinilla discloses at col. 6, lines 35-44, mixtures of peptides in which individual residue position can be specifically defined, such that a comprehensive array of peptides is available for the identification of one or more of the optimal peptides for reaction with receptors of interest, from which one can derive optimum therapeutic materials for treatment of various organism dysfunctions. Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the different libraries of Cantley into a panel for the advantages taught by Pinilla. These advantages would provide the motivation to one skill in the art to form said panel or array.

Claims 22, 25-30, 39-40 and 42 are rejected under 35 U.S.C. 103(a) as being obvious over Sparks et al (6,303,574).

Art Unit: 1639

Sparks et al discloses a phage-displayed random peptide. The library of peptide has at least 9 and up to 45 amino acid (AA) residues. Particular 13-mer peptides of the present invention include as listed with a middle portion residue Pro, as the middle residue e.g., PGFRELPLPPSR (SEQ ID NO:72), AQSRPLPIPPETR (SEQ ID NO:73), VLKRPLPIPPVTR (SEQ ID NO:64), PPNSPLPPLPTHL (SEQ ID NO:74), TGRGPLPPLPND (SEQ ID NO:75), YSTRPVPPITRPS (SEQ ID NO:76), SHKSRLPPLPTRP (SEQ ID NO:77), YRFRALPSPPSAS (SEQ ID NO:78), GPHRRLPPTPATR (SEQ ID NO:65), LAQRQLPPTPGRD (SEQ ID NO:79), ALQRRLPRTPPPA (SEQ ID NO:80), PATRPLPTRPSRT (SEQ ID NO:81), YSTRPLPSRPSRT (SEQ ID NO:82), XPGRILLLPSEPR (SEQ ID NO:83), SGGILAPPVPPRN (SEQ ID NO:84), RSTRPLPILPRTT (SEQ ID NO:85), STPRPLPMLPTTR (SEQ ID NO:86), STNRPLPMIPTTR (SEQ ID NO:87), RSTRPLPSLPITT (SEQ ID NO:88), STSRPLPSLPITT (SEQ ID NO:89), RSTRSLPPLPPTT (SEQ ID NO:90), RSTRQLPIPPTTT (SEQ ID NO:91), STPRPLPLIPTTP (SEQ ID NO:92), RSTRPLPPTPLTT (SEQ ID NO:93), and RSTRPQPPPPITT (SEQ ID NO:94). Sparks further discloses that other peptides not specifically disclosed, which either comply with or "resemble" the preferred 9-mer consensus motif, can be readily envisioned by those of ordinary skill in the art and are considered to be equivalent to those that are specifically disclosed above. In particular, non-compliance at positions 1 (S, G, and I, in place of R, are

Art Unit: 1639

tolerated), 3 (V, A, and Q, in place of L, are tolerated), 4 (L, in place of P, is tolerated), 5 (hydrophilic amino acid residues, S, R, and T, are tolerated in place of a hydrophobic amino acid residue), 6 (hydrophilic amino acid residues, R and T, are tolerated in place of a hydrophobic amino acid residue), 7 (T, and S, in place of P, are tolerated), and 9 (P and A are tolerated in place of a hydrophilic amino acid residue) have been observed. Pinilla discloses at col. 6, lines 35-44, mixtures of peptides in which individual residue position can be specifically defined, such hat a comprehensive array of peptides is available for the identification of one or more of the optimal peptides for reaction with receptors of interest, from which one can derive optimum therapeutic materials for treatment of various organism dysfunctions. Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the different libraries of Sparks into a panel for the advantages taught by Pinilla. These advantages would provide the motivation to one skill in the art to form said panel or array.


No claim is allowed.

Art Unit: 1639

Any inquiry concerning this communication or earlier communications from the examiner should be directed to T. D. Wessendorf whose telephone number is (571)272-0812. The examiner can normally be reached on Flexitime.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Wang can be reached on (571)272-081. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


T. D. Wessendorf
Primary Examiner
Art Unit 1639

Tdw
June 9, 2004